Hancock's well known paper "On the Anatomy and Physiology of the Tunicata," originally published in the *Journal of the Linnean Society*, 1867, is appropriately reprinted here.

Naturally and very wisely, Mr. Hopkinson has refrained from any revisions of the text beyond what was absolutely necessary to rectify obvious typographic errors. It results from this that in several particulars both as to interpretation of structure, and classification, there is want of conformity to views now held. The most striking thing in this regard is the contention for the molluscan affinities of the tunicates. (The only discussion, however, of this question is that contained in Mr. Hancock's memoir above referred to.) The arguments put forward in support of this view are decidedly interesting reading from a historical point of view, and from the standpoint of now approved criteria of homology. It is surprising that Hancock should have failed even so much as to mention the theory of the vertebrate relationships of the group. One must suppose that at the time of writing this memoir the author had not yet become acquainted with Kowalevsky's important paper on embryology, published the year before. The only clue given us as to what either author's later views were on this fundamental matter, is found in the reference to a paper by Hancock, published in 1870, "On the Larval State of Molgula" etc. Here the author concluded that since there are two distinct modes of development in closely allied genera of the Tunicata, the tadpole condition is non-essential; and he expressed the belief that this fact would influence the theory of the vertebrate relationship of the group.

This volume treats only of the genus Ascidia, in the systematic part, as the genus was then understood. Thirty species are regarded as "good," and five varieties are recognized.

Although the volume is numbered *one*, I see no indication that another is to follow.

It is certainly well that this work is now published, but as certainly it would have been much better could it have been done long years ago.

W. E. R.

Schillings's With Flash-light and Rifle.[1]—The rapidity with which the larger mammals of Africa are becoming exterminated makes it

[1] Schillings, C. G. *With Flash-light and Rifle. Photographing by Flash-light at Night the Wild Animal World of Equatorial Africa.* Translated and abridged by Henry Zick, Ph. D. New York, Harper Brothers, 1905. 8vo, xiii + 421 pp., illus.

imperative that no time be lost in procuring specimens for study and in investigating their habits. Schillings, a German hunter-naturalist, is one of several explorers who in recent years have made expeditions into the Dark Continent and have brought back valuable collections of its rich fauna.

Four expeditions were made into German East Africa by Schillings, and a large number of carefully prepared specimens of the more important game mammals were secured and brought to Berlin for the imperial museum. Several new species have been described from this material (mainly by Matschie) and many others have been forms that are very rare in collections. The present work is mainly an account of the experiences of Herr Schillings during these four journeys into the African wilderness, and is translated and abridged by Henry Zick from the original *Mit Blitzlicht und Büchse* (1905).

The chief feature of the book is the large number of photographs of these animals in their natural surroundings, taken by the author during his three last expeditions. Many of these pictures are remarkable and extremely valuable, taken at night by flashlight as the animals came to the water-holes to drink. Other views were obtained by means of a telephoto lens and illustrate a number of the antelopes and other day-feeding species. Those of the giraffe, the zebra, the lion, and the leopard are particularly noteworthy. Many of the photographs, however, are altogether too indistinct to be of any value, though from an impressionist's standpoint they may pass as pictures. These less satisfactory views have been largely omitted from the English edition, however.

While the photographs are the main feature of the book and by themselves are of permanent value, the narrative is also of interest as a popular treatise on the habits of the species dealt with. A number of notes on the larger mammals are recorded in the course of the narrative, such as the blending of the black and white striped zebras with "the colors of the steppe, so that they are hard to distinguish even at close range" and "under certain lights they appear grayish." That lions at certain times of the year may be found in "troops" of as many as seventeen the author has had personal proof. It is also true that the lynxes of our own country may at times be found in packs although a recent nature writer has dogmatically denied this. The versatility of the long-necked Waller gazelle is shown in its habit of standing on its hind legs, after the manner of goats, in order to increase the vertical extent of its feeding range. In addition to chapters on the rhinoceroses, the elephant, the lion, the giraffe, the zebra, antelopes, and the smaller

carnivores, the latter part of the book deals particularly with the inhabitants of the country and the difficulties that confront the explorer.

The translation is in the main good, though marred here and there by a grammatical error and by a certain looseness of expression, as where scorpions are termed "reptiles," and hippopotami are familiarly spoken of as "river hogs"; the use of capitals for the authority of Latin names seems also to have afforded a stumbling block. An index might have added to the usefulness of the book.

G. M. A.

Notes.— *Recent Extension of the Range of the Green Crab.* About the year 1892 or 1893, I first began to notice at Cohasset, Mass., an occasional specimen of a green crab. These crabs were about two inches in diameter and were seen at low tide on the mud flats about our float in company with *Cancer irrorata*. From that time on I noticed a gradual increase in their numbers but thought nothing of it until 1902, when a reference to a "green crab" in a physiology lecture made me wonder if the crab which had recently become so abundant at Cohasset was the same as that experimented upon. On submitting specimens to Dr. Walter Faxon for determination, I learned that they were *Carcinides mœnas*, a species that was not believed to occur north of Cape Cod. In the course of the summer I collected specimens at the following additional localities: Nahant, Lynn, and Ipswich, Mass., and Kittery, Maine. In the same year (1902) it was collected at Manomet Point, Mass., by Mr. J. A. Cushman, and a record of its occurrence at Portland, Maine, was obtained by Dr. Faxon. Miss Mary J. Rathbun in her "List of New England Crustacea," gives the following additional localities in Maine: Harpswell; New Meadows River, near Harpswell; and Eagle Harbor, Casco Bay; all, I believe, based on records obtained shortly previous to 1904.

The next spring, 1904, I determined to find out just how far to the eastward the green crab had reached, but gave up the undertaking after several attempts to procure specimens from Cohasset had proved unsuccessful and after hearing from Kittery that there were practically none to be found there. The winter of 1903–04 had been unusually severe along the shore and the ice consequently very thick. It had scraped every bit of eel grass from off the mud flat at the edge of which the year before I had been able to find an abundance of green crabs and it had probably killed off the crabs along with the eel grass. During the summer I made careful search for more specimens of Carcinides at every locality where I collected and especially at Cohas-